

science
technology
research
education
innovation
excellence



FORTH

FOUNDATION FOR RESEARCH AND TECHNOLOGY - HELLAS

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Description

The Foundation for Research and Technology - Hellas (FORTH) was founded in 1983. It is one of the largest research centers in Greece with well-organized facilities, highly qualified personnel and a reputation as a top-level research institution worldwide.

FORTH conducts specialized scientific research in strategic high-added value sectors, focusing on interdisciplinary research and development (R&D) activities in areas of major scientific, societal and economic interest, such as: Lasers and Photonics, Microelectronics, Advanced Materials/Nanotechnology, Molecular Biology and Genetics, Biotechnology, Computer Science, Bioinformatics, Precision Medicine, Systems Biology, Robotics, Telecommunications, Applied and Computational Mathematics, Chemical Engineering Sciences, Energy, Environment, Human and Social Sciences, Astrophysics and Astronomy.

**Create and maintain an environment that fosters
Learning, Research and Innovation
as pillars for Regional, National and European
socio – economic growth**

The Foundation comprises 9 Research Institutes. Its headquarters and central administration are based in Heraklion, Crete.

FORTH Institutes*In Heraklion*

- [Institute of Electronic Structure and Laser](#) (IESL)
- [Institute of Molecular Biology and Biotechnology](#) (IMBB)
- [Institute of Computer Science](#) (ICS)
- [Institute of Applied and Computational Mathematics](#) (IACM)
- [Institute of Astrophysics](#) (IA)

In Rethymnon

- [Institute for Mediterranean Studies](#) (IMS)

In Chania

- [Institute of Geoenergy](#) (IG)

In Patras

- [Institute of Chemical Engineering Sciences](#) (ICE-HT)

In Ioannina

- [Biomedical Research Institute](#) (BRI)

FORTH has also founded:

- ✓ [The Crete University Press](#) (CUP)
- ✓ [The Skinakas Observatory](#) (in collaboration with the University of Crete)
- ✓ [The PRAXI Network](#), a technology transfer Unit
- ✓ [The Science and Technology Park of Crete](#) (STEP-C)

Scientific Publications and Citations (2010-2020)

Publications: **6,816**
Citations (without self-citations): **159,224**
h-index: **140**
Average citations per item: **23.25**
Citing articles (without self-citations): **121,747**

People (31-12-2020)

Members: **1,518**
Permanent staff: **330**
.....
Researchers: **107**
Collaborating Faculty Members: **156**
Fellowships/year (incl. postdoctoral): **607**
Research associates, technical and administrative personnel: **648**

Distinctions

➤ **FORTH ranks 1st:**
among the Research Centers in Greece, in all comparative evaluations conducted by international committees

.....
by the European Commission, among all Greek Research Centers and Universities
.....
in *Nature's INDEX* of Research Institutions in Greece
.....
in the Ranking Web of Research Centers in Greece
.....

••• **State-of-the-art research facilities and expertise**
European Research Facility in Lasers, Polymers, Cultural Heritage & Genomics sectors

••• **34 ERC Grants**
.....

••• **162 Marie Curie Excellence Awards**

State-of-the-art research facilities and Activities

- **Highly specialized Research Facilities** in Forefront Laser Technologies, which participate actively in the European Research Infrastructures Programme, in the areas of Ultraviolet Lasers, Cultural Heritage Science, Soft Matter and Nanosciences (we have provided more than 3,500 days of access to more than 500 researchers from all over the world within LaserLab alone).
- **The “Skinakas” Observatory**, in collaboration with the University of Crete and the Max Planck Institute of Extraterrestrial Physics in Germany, which provides the best observation conditions in the Mediterranean Basin. The Skinakas Observatory offers open days to the public during the summer months.
- **Common research lab** with the Palace museum of the Forbidden City in Beijing, for technology transfer on the conservation of monuments and Art masterpieces.
- **Internationally Associated Lab** in collaboration with CNRS and Aix-Marseille University.
- Participates in **the Greek National Network for Precision Medicine**, implementing the Precision Medicine Unit in Crete, in collaboration with the University of Crete.
- **The 1st Ancient DNA Analysis Lab** in Greece, one of the few in Europe.
- **Genomics Analysis Center** with applications on Biomedicine, on Cultural Heritage and on Agrifood sector.
- **Biomedical Imaging Unit** equipped with PET/CT (unique in Crete), in collaboration with the Medical School of the University of Crete and the University Hospital of Crete.
- **FORTH Graphene Centre**, the main pillar for graphene research in Greece, which actively participates in the Graphene FLAGSHIP - selected as Future and Emerging Technology (FET) by the European Commission.
- **Computational-Mathematical Intense Data Modelling unit** for Materials science and Bio-Medical applications in collaboration with the National Technical University of Athens.
- **The first Metabolomic Analysis in Systems & Network Biology Laboratory** in South-Eastern Europe, contributing to technologies & applications in Precision Medicine and Agriculture.
- **Micro-PET facility** in the context of the research taking place in the advanced hybrid imaging systems programme.
- **The first Laboratory in the Eastern Mediterranean** area offering ground based & satellite remote sensing, prospection and GIS management of cultural heritage monuments, sites protection and environmental resources.
- **The only research unit in Greece** exclusively dedicated to the systematic study of Ottoman history.
- **The only El Greco Centre** of Art History in the Mediterranean.
- **The Largest archive for Neohellenic Theatrical** performances in the Eastern Mediterranean from 1830s to 1930s.
- **The only Centre of Maritime History** in Eastern Mediterranean.
- **World-class center** for air quality and climate change research, serving as a consultant and providing atmospheric chemical transport models to several countries and internationally.
- **1st AXA Chair Grant** in Greece, in Epigenetics research.

- **Ambient Intelligence (Aml) Programme**, a long term horizontal interdisciplinary RTD Programme, aiming at developing and applying pioneering human centric Aml technologies and Smart Environments in everyday life.
- **Data Science Programme** for addressing challenges related to the management and analysis of very large volumes of heterogeneous data in various domains.
- **Computational predictive-modelling activities** for geophysical and environmental flows.
- **Cutting-edge technology** & expertise in fuel cells, soil pollution monitoring and remediation, clean hydrogen production and CO₂ capture.
- **Developing processes** for waste biotransformation to useful chemicals.

Education and advanced training

FORTH:

- **awards more than 500 fellowships** per year to undergraduates, Master's and Doctoral students, Postdocs and trainee scientists.
- **participates in interdisciplinary graduate programs** in collaboration with Greek Universities:
- "Photonics and Nanoelectronics" & "Nanotechnology and Energy Applications" in collaboration with the University of Crete and the Technological and Educational Institute of Crete.
- "Biomedical Engineering" in collaboration with the University of Crete & the Technical University of Crete.
- "Bioinformatics", "Brain and Mind", "Ottoman History" and "Theatrical and Cinema Studies" in collaboration with the University of Crete.
- "Microsystems and Nanostructures" in collaboration with the National Technical University of Athens and Demokritos Research Centre.
- **FORTH Researchers teach in many graduate programs offered by Greek Universities.**
- **organizes an annual series of advanced seminar lectures**, on cutting-edge research fields in Physics, Chemistry, Biology, Mathematics and Computer Science, in collaboration with the Alexander S. Onassis Public Benefit Foundation. The main objective of the series is to provide an advanced education and training framework for talented Greek and International graduate and senior undergraduate students, which are selected to participate based on academic merit.
- **supports secondary education initiatives** for student career advising and interaction with research labs in Greece. Each year, more than 1,100 high school students visit FORTH premises and become acquainted with its scientific activities.
- **is visited by 2,500 people every year**, for the last 14 years, at "Researcher's Night", an initiative of the European Commission taking place in parallel in 300 European Cities, on the last Friday of September.
- **has trained more than 15,000 scientists** in new technologies.
- **has established the Crete University Press (CUP)**, with 700 titles published to-date (30-35 new publications/year), more than 2,100,000 copies sold (110,000/year) and 26 Awards. CUP Books have been adopted as textbooks in more than 1,700 university courses across the country. Crete University Press has established the "Mathesis" Open Online Courses (with more than 60,000 students to-date).

Employment and Entrepreneurship

FORTH:

- **has directly or indirectly created >1,400 highly skilled jobs** through its activities.
- **has contributed to the “brain gain”** by hiring or collaborating with new scientists who currently work as University Professors and Collaborating Faculty Members at FORTH.
- **has established and developed the first Technology Park in the country**, located in Patras, currently supervised by GSRT.
- **has established the Science and Technology Park of Crete** which hosts and supports start-up companies.
- **has established the PRAXI Network** and contributed to more than 500 research and technology contracts with Greek and International companies and Organizations.
- **has created and operates business clusters** in various technology sectors (Hellenic Digital Health Cluster, Hellenic Bio Cluster, Hellenic Photonics Cluster, Innovation Greece).
- **has developed scientific and technological collaborations** with more than 300 companies.
- **has developed and supported several spin-off companies.**
- **promotes conference tourism:** ~30.000 overnight stays/year.
- **directly supports the market of the Regions of Crete and Western Greece** with ~ 3 M€ / year.

Contributions to the societal and regional Development

- **provides support to the local regional and municipal authorities;** has contributed to the design of the Research and Innovation Strategies for Smart Specialization (RIS3) in the Regions of Crete, Western Greece and Epirus.
- **implements the pilot program “Crete Innovation Initiative” (CrInI)** in cooperation with the local Academic and Research Institutions for the development of a knowledge based economy in Crete.
- **has established health information infrastructures** in hospitals and medical units in various Greek Regions.
- **has developed interactive systems, online services and smart environments** that contribute to the improvement of urban quality of life as well as, specialized systems and services for the elderly and disabled people.
- **has participated in the development and operation of the Greek “Safeline”** which responds to reports for illegal online content.
- **has contributed to the analysis, diagnosis and conservation of Cultural Heritage objects and monuments.**
- **is involved in projects for the evaluation of the effects of climate change** on Monuments like Knossos and Castello a Mare (“Koules”) in collaboration with Heraklion Ephorate of Antiquities.
- **cooperates widely with cultural Institutions** for the promotion of Greek culture, history, traditional products.
- **provides air pollution measurement services** and electromagnetic radiation measurement services from mobile phone antennas in urban environments.

- **participates in the Agrifood Cooperation** and is a member of the respective Scientific Committee in the Region of Western Greece.
- **actively participates in the Entrepreneurship and Development Alliance** in Western Greece.
- **creatively cooperates with the Patras Science Park** for the exploitation of research results and promotion of innovation.
- **has carried out research in the history of the cities** of the Eastern Mediterranean and the Black Sea Aegean and Ionian island communities (18th-20th centuries) and has formed large databases on agricultural and industrial production, on trade, shipping and population structure.
- **has developed IoT infrastructure** and intelligent technologies contributing to the smart city vision of the Municipality of Heraklion.
- **organizes open events** and lectures communicating its scientific accomplishments to the public.